

What is claimed is:

1. A method for measuring a thickness of an oxide film, comprising:

forming an oxide film on a substrate;

controlling a left period of time for leaving the oxide film from the formation of the oxide film to measurement of a thickness of the oxide film; and

measuring the thickness of the oxide film by irradiating the oxide film with light, in accordance with the left period of time.

2. The method of claim 1, further comprising correcting the thickness of the oxide film, which is measured when the left period of time is elapsed from the formation of the oxide film, based on the left period of time to obtain a real thickness of the oxide film.

3. The method of claim 2, wherein the thickness of the oxide film is corrected by a formula of:

$$y = a \cdot \ln(t) + b$$

in which t is the left period of time from the formation of the oxide film to the measurement of the thickness, y is the thickness of the oxide film measured when the left period of time is elapsed, a is a constant determined based on atmosphere around the oxide film, and b is the real thickness of the oxide film.

4. The method of claim 1, wherein the thickness of the oxide

film is measured within the left period of time to include a change variation T in thickness that is produced in accordance with the left period of time and satisfies a formula of:

$$\sqrt{S^2 + T^2} \leq U$$

in which S is a variation in thickness that is produced when the oxide film is formed, and U is an allowable latitude in the thickness of the oxide film.

5. A method for measuring a thickness of an oxide film, comprising:

forming an oxide film on a substrate;
washing a surface of the oxide film; and
measuring a thickness of the oxide film by irradiating the oxide film with light.

6. The method of claim 5, wherein the surface of the oxide film is washed using a solution containing at least one of H_2SO_4 and HCl.

7. The method of claim 6, wherein the solution is one of a mixed solution of H_2SO_4 and H_2O_2 and a mixed solution of HCl and H_2O_2 .

8. The method of claim 5, further comprising
controlling a left period of time for leaving the oxide film from the washing of the surface of the oxide film to the measurement of the thickness; and

measuring the thickness of the oxide film in accordance with the left period of time.

9. The method of claim 8, further comprising correcting the thickness of the oxide film, which is measured when the left period of time is elapsed from the washing of the oxide film, based on the left period of time to obtain a real thickness of the oxide film.

10. The method of claim 9, wherein the thickness of the oxide film is corrected by a formula of:

$$y = a \cdot \ln(t) + b$$

in which t is the left period of time from the washing of the oxide film to the measurement of the thickness, y is the thickness of the oxide film measured when the left period of time is elapsed, a is a constant determined based on atmosphere around the oxide film, and b is the real thickness of the oxide film.

11. The method of claim 8, wherein the thickness of the oxide film is measured within the left period of time from the washing of the surface of the oxide film to include a change variation T in thickness that is produced in accordance with the left period of time and satisfies a formula of:

$$\sqrt{S^2 + T^2} \leq U$$

in which S is a variation in thickness that is produced when the oxide film is formed, and U is an allowable latitude in the thickness of the oxide film.

12. A method for manufacturing a semiconductor device, comprising:

forming on oxide film;

measuring a thickness of the oxide film in accordance with a left period of time for leaving the oxide film from the formation of the oxide film;

determining whether the thickness of the oxide film falls in a desirable range; and

performing a succeeding step for manufacturing the semiconductor device when the thickness of the oxide film falls in the desirable range.

13. The method of claim 12, further comprising correcting the thickness of the oxide film, which is measured when the left period of time is elapsed from the formation of the oxide film, to obtain a real thickness of the oxide film, wherein:

the succeeding step is performed when the corrected thickness falls in the desirable range.

14. The method of claim 13, wherein the thickness of the oxide film is corrected by a formula of:

$$y = a \cdot \ln(t) + b$$

in which t is the left period of time elapsed from the formation of the oxide film to the measurement of the thickness, y is the thickness of the oxide film measured when the left period of time is elapsed, a is a constant determined based on atmosphere

around the oxide film, and b is the real thickness of the oxide film.

15. The method of claim 12, wherein the thickness of the oxide film is measured within the left period of time to include a change variation T in thickness that is produced in accordance with the left period of time and satisfies a formula of:

$$\sqrt{S^2 + T^2} \leq U$$

in which S is a variation in thickness that is produced when the oxide film is formed, and U is an allowable latitude in the thickness of the oxide film.

16. A method for manufacturing a semiconductor device, comprising:

forming an oxide film;

washing a surface of the oxide film;

measuring a thickness of the oxide film by irradiating the oxide film with light;

determining whether the thickness of the oxide film falls in a desirable range; and

performing a succeeding step for manufacturing the semiconductor device when the thickness of the oxide film falls in the desirable range.

17. The method of claim 16, wherein the surface of the oxide film is washed using a solution containing at least one of H_2SO_4 and HCl.

18. The method of claim 17, wherein the solution is one of a mixed solution of H_2SO_4 and H_2O_2 and a mixed solution of HCl and H_2O_2 .

19. The method of claim 16, further comprising controlling a left period of time for leaving the oxide film from the washing of the surface of the oxide film to the measurement of the thickness, wherein:

the thickness of the oxide film is measured in accordance with the left period of time.

20. The method of claim 19, further comprising correcting the thickness of the oxide film, which is measured when the left period of time is elapsed from the washing of the oxide film, based on the left period of time to obtain a real thickness of the oxide film.

21. The method of claim 20, wherein the thickness of the oxide film is corrected by a formula of:

$$y = a \cdot \ln(t) + b$$

in which t is the left period of time elapsed from the washing of the oxide film to the measurement of the thickness, y is the thickness of the oxide film measured when the left period of time is elapsed, a is a constant determined based on atmosphere around the oxide film, and b is the real thickness of the oxide film.

22. The method of claim 20, wherein the thickness of the oxide film is measured within the left period of time from the washing of the surface of the oxide film to include a change variation T in thickness that is produced in accordance with the left period of time and satisfies a formula of:

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9.1.2
See

$$\sqrt{S^2 + T^2} \leq U$$

in which S is a variation in thickness that is produced when the oxide film is formed, and U is an allowable latitude in the thickness of the oxide film.